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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of

Amendment of Part 90 of the
Commission's Rules to Adopt
Regulations for Automatic
Vehicle Monitoring Systems

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PR Docket No. 93-61

To: The Commission

COMMENTS OF
THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED

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SUMMARY

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, submits its comments in response to the Notice of Proposed Rule Making, FCC 93-141, 8 FCC Rcd. 2502 (1993), amended by Erratum, DA 93-516, 8 FCC Rcd. 3233 (1993) (the Notice). The Notice proposes amendments to the Private Land Mobile Service rules which would expand the use of Automatic Vehicle Monitoring (AVM) systems (AVM) in the 902-928 Mhz band. The Notice also proposes to expand the concept of AVM operation, beyond the currently authorized purposes therefor, and to rename the AVM service the "Location and Monitoring Service" (LMS). In addition to the location of vehicles and to communicate the status and other information about the vehicles involved, the Notice proposes to permit licensees to conduct non-voice signaling from and to radio units to make known the location of such units, and to transmit and receive status and instructional messages related to the units involved. Private carriers would be eligible for licensing, and could therefore sell the service to members of the public.

The League recommends that the Commission adopt no rules in this proceeding unless and until it has studied the interaction between AVM and wind profiler radar systems, the suitability of AVM operations for highway safety systems in a crowded RF environment, and the alternative technologies available for the same purpose served by AVM and LMS. In order to protect other users of this crowded allocation from usurpation by one user, the Commission should not expand the frequencies available for AVM/LMS at 902-928 Mhz, but rather continue to limit such operation to 903-912 MHz and 918-927 MHz. Finally, the Commission should make alternative provision for any need for LMS operation (other than traditional AVM operation) in frequency bands other than 902-928 MHz. At the same time, the Commission should determine whether IVHS planning might be better furthered by the abandonment of the 1974 AVM technology in the band and expanded use of other Intelligent Vehicle Highway System (IVHS) configurations.

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THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, by counsel and pursuant to Section 1.415 of the Commission's Rules (47 C.F.R. §1.415) hereby respectfully submits its comments in response to the Notice of Proposed Rule Making, FCC 93-141, 8 FCC Rcd. 2502 (1993), amended by Erratum, DA 93-516, 8

to the Private Land Mobile Service rules which would expand the use of Automatic Vehicle Monitoring Systems (AVM) in the 902-928 MHz band. The Notice also proposes to expand the concept of AVM operation, beyond the currently authorized purposes therefor, and to rename the AVM service the "Location and Monitoring Service" (LMS). In addition to the location of vehicles and to communicate the status and other information about the vehicles involved, the Notice proposes to permit licensees to conduct non-voice signaling from and to radio units to make known the location of such units, and to transmit and receive status and instructional messages related to the units involved. In short, LMS licensees would be able to monitor or locate any object. Private carriers would be eligible for licensing, and could therefore sell the service to members of the public. In response to the Notice proposals the

by the end of 1974, adopted interim rules for the operation of the then-nascent AVM service in the band as well.²

2. At WARC-79, the United States proposed, and obtained concurrence on, the addition of mobile (except aeronautical mobile) and amateur allocations. The band became available to amateurs on a secondary basis in 1985, following implementation decisions³ and the adoption of service rules⁴ therefor. The band is available to the Amateur Radio Service only in ITU Region 2. Domestically, Part 15 devices are permitted to operate in the band, at significant field strengths.⁵ The principal United States rationale at WARC-79 for the Region 2 amateur and mobile allocations at 902-928 MHz was to satisfy future requirements for services which do not require protection from interference.

3. Domestically, the current primary allocation of 902-928 MHz is government (military) radiolocation, although that service must accept interference from ISM centered at 915 MHz.⁶ Government, non-

² See, the Report and Order, docket 18302, 30 RR 2d 1665 (1974).

³ See, the Second Report and Order, Gen. Docket 80-739, 49 Fed. Reg. 2357, released January 19, 1984.

⁴ See the Second Report and Order, PR Docket 84-960, 58 RR 2d 1073 (1985).

⁵ See, 47 C.F.R. §§15.243, 15.245, 15.247 and 15.249.

⁶ See International Footnote 707: "In Region 2, the band 902-928 MHz (center frequency 915 MHz is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band accept harmful interference

military operation of radiolocation systems are authorized on a secondary basis to military radiolocation.⁷ After that, the hierarchy of allocations in the band is as follows: government fixed and mobile, including low power radio control operations on a secondary basis;⁸ non-government radiolocation (AVM systems);⁹ amateur radio, subject to minor geographic restrictions in footnotes US267 and US275;¹⁰ and Part 15 devices.

4. In addition to this vast array of different users of the 902-928 MHz band, the Commission is currently considering yet another user. In Docket 93-59, the Commission has inquired whether there is a place for wind profiler radars in that band, occupying

which may be caused by these applications..."

⁷ See Footnote G59, 47 C.F.R. §2.106. According to NTIA Report No. 93-294, which discusses Federal Government Spectrum Usage in the 902-928, 2400-2500, and 5725-5785 MHz bands (February, 1993), non-specific government services in the 902-928 MHz band include space and experimental applications.

⁸ Footnote G11, 47 C.F.R. §2.106.

⁹ Footnote US218, 47 C.F.R. §2.106.

¹⁰ Footnote US 275 additionally states that "(T)he band 902-928 MHz is allocated on a secondary basis to the Amateur Service subject to not causing harmful interference to the operations of Government stations authorized in this band or to the Automatic Vehicle Monitoring (AVM) systems. Stations in the Amateur Service must tolerate any harmful interference from the operations of industrial, scientific and medical (ISM) devices, AVM systems, and the operations of Government stations authorized in this band..."

12.5 MHz of bandwidth.¹¹ According to Radian Corporation, which manufactures wind profiler radar systems, the frequency range sought for wind profiler radars at 902-928 MHz is 908.75 to 921.25 MHz. Comments in that proceeding reveal that wind profiler radars in the vicinity of 915 MHz may be deployed in metropolitan areas. The comments also reveal significant opposition from AVM proponents. There are no studies of which the League is aware which address the interference potential and required separations between wind profiler radars and AVM systems at 902-928 MHz.

5. The interim rules for AVM operation, set forth at 47 C.F.R. §90.239, permit AVM operation on the following frequency bands at 902-928 MHz: 903-904 MHz, 904-912 MHz, 918-926 MHz, and 926-927 MHz. In the petition for rule making (RM-8013) which formed the basis for this proceeding, North American Teletrac and Location Technologies, Inc. requested use of the same frequencies (i.e. two narrowband channels and two wideband, pulse-ranging channels).¹² The instant notice, however, without explanation, proposes a

¹¹ See, the Notice of Proposed Rule Making and Notice of Inquiry, 8 FCC Rcd. 2546 (1993).

¹² There was, in other words, no proposal by the petitioner to expand the frequency bands available for AVM operation. 902-903 MHz, 912-918 MHz, and 927-928 MHz would, under the RM-8013 proposal, still be excluded. In 1974, when the Commission established the interim rules for AVM operation, it specifically limited the use of the 904-912 MHz and 918-926 MHz bands to wideband operation. See the Report and Order, 30 RR 2d 1665, 1670 (1974). The Commission also designated the 903-904 MHz and 926-927 MHz segments for developmental narrowband operation. Id., 30 RR 2d at 1671. The 902-903 MHz and 927-928 MHz segments were withheld for future rulemaking. Id.

channelization plan that encompasses the entire 902-928 MHz band,¹³ and includes the frequencies 902-903 MHz, 912-918 MHz, and 927-928 MHz for narrowband LMS systems. It is not apparently necessary to add these frequencies in order to accommodate narrowband LMS channels separate from the wideband (8 MHz) channels traditionally used at 904-912 MHz and 918-926 MHz. Nor has such been requested by the petitioner. The additional use of 902-903 MHz, 912-918 MHz, and 927-928 MHz thus appears gratuitous, and without justification.

II. Amateur Uses of 902-928 MHz

6. Amateur radio has been able to share the 902-928 MHz band with AVM stations operating pursuant to the interim rules since the

experimentation and the development and enhancement of amateur television.

7. The Commission has repeatedly emphasized the continued availability of the 902-928 MHz band to the Amateur Radio Service when considering allocation decisions in other bands which affect amateur radio.¹⁴ As the result of those reallocation decisions, the Amateur Radio Service has relied (and has had no choice but to rely) on those representations. To significantly reduce the availability of the band for amateur use (by creating permanent service rules for LMS operation which in effect reduce the utility

¹⁴ For example, in General Docket 87-14, the Commission justified the reallocation of the 220-222 MHz band from the Amateur Radio Service because of the ready availability to amateurs of additional spectrum at, inter alia, 902-928 MHz. The Commission stated, on reconsideration in that proceeding, that:

Further, we note that in some areas, such as southern California, it may be necessary to begin moving some operations to higher frequency bands, such as the 902-928 MHz amateur band.

A number of amateur interests challenge the Commission's statement in the Report and Order that the 2 MHz from 220-222 MHz represents less than a 2% reduction in amateur spectrum. We believe this statement is fair and correct. In making this statement, the commission included only amateur bands that are capable of supporting operations similar to those in the 220 MHz region. These bands...(including) 902-928 MHz, provide 128.7 MHz of spectrum to the amateur service, of which 2 MHz represents less than 2%. We recognize that some of these bands are shared bands; however, all are available and used by the amateur service.

Further, we believe the 902-928 MHz band provides a significant opportunity for the growth of packet radio...The amateur band plan for 902-928 MHz provides two 3 MHz channels for packet radio.

Memorandum Opinion and Order, 4 FCC Rcd. 6407 (1989)

of the band for amateurs), would constitute a breach of the Commission's previous assurances to the Amateur Radio Service of the availability of the band. Such would ill-serve the public who benefit from amateur radio, as well as amateur radio licensees themselves. Indeed, in the Erratum, supra, the Commission established as a policy matter that its specific intention in this proceeding is to enact rules for LMS that do not "(remove) Part 15 users and amateur radio operations from the band, (restrict) where such users could operate in the band, or (place) stricter limitations on the operation of such users in the band." Given this, the Commission must, by the same token, avoid rules which would, de facto, reduce the availability of the band for those same users, or to make sharing significantly more difficult than it is at present.¹⁵

8. In 1989, the League adopted a band plan for the 902-928 MHz allocation. Therein, the 902-903 MHz segment was intended for weak-signal communications and propagation experimentation; 903-909 MHz for digital modes and voice repeater outputs; 909-915 MHz for amateur television (ATV); 915-918 MHz for digital modes; 918-921 MHz for voice repeater inputs; 921-927 MHz for ATV; and 927-928 MHz for FM simplex and links. While the use of the band for FM voice

¹⁵ Any reduction in the amateur use of the 902-928 MHz band will have a direct adverse effect on the United States small businesses which manufacture and sell amateur radio equipment for the band. The League has identified at least 16 small businesses which manufacture equipment for the band, ranging from downconverters, television transmitters, preamplifiers, antennas, interdigital filters, receivers, transceivers, and meters.

communications began slowly in the late 1980s when the band first became available, it is now on the increase. ATV use of the band, is quite widespread at present, and growing fast. One reason for this increase is the loss along Line A of the 420-430 MHz band, formerly heavily used by amateurs for ATV operation. Outside of line A, the segments of the 420-450 MHz band available for ATV are congested. Other than 420-450 MHz, the lowest frequency with a significant opportunity for ATV operation is the 902-928 MHz band. It is thus the primary source of spectrum for amateur television operation.

9. The extensive development of AVM in the Los Angeles area has resulted in a locally adopted band plan intended to work around AVM operation there. This band plan, adopted by the local amateur community via the frequency coordinator there, makes heavy use of

the 902-928 MHz band, which is the primary source of spectrum for amateur television operation.

purposes to be served by those licensees, will reduce the utility of the band to the Amateur Radio Service, on which amateurs have come to rely.

10. In November of 1992, the League filed comments in NTIA Docket 950532-2132. This proceeding addressed current and future requirements for the use of radio frequencies in the United States. In that proceeding, the Assistant Secretary for Communications and Information of NTIA asked specifically for information as to the amount of spectrum required by various radio services. With respect to the 902-928 MHz band, the League stated:

The amateur service seeks continued access to the band 902-928 MHz, with the band 902-903 MHz as primary and the band 903-928 MHz as secondary. This band is allocated to the amateur service on a secondary basis. It is useful to the amateur service despite its being an ISM band, and being shared with automatic vehicle monitoring (AVM) and low power (Part 15) devices.

The League suggests that any resolution of this proceeding should not prejudice consideration of elevation of the status of the Amateur Radio Service in the band to co-primary among non-government users.

III. New AVM Rules Should Avoid Reduction of the Utility of the Band to The Amateur Radio Service

11. Amateurs can and will continue to share the 902-928 MHz band without interference to the services which it must protect, notwithstanding any service rule changes adopted in this or other proceedings. Amateurs will develop adaptive band plans to accommodate their sharing obligations, as has been done to date. However, it is obvious that any services operating in the sharing

environment created by historical decision making must be extremely robust in order to survive. The 902-928 MHz allocation status is and has been essentially unplanned, and the users of the band must be able to accept significant amounts of interference, and to operate generally with the flexibility that such an interactive RF environment demands. It is not at all clear, from either the North American Teletrac and Location Technologies, Inc. petition or the Notice, that AVM technology is suited to such an environment. The Commission appears to have determined uncritically that 1974 AVM technology stands to play a part in the Intelligent Vehicle Highway System (IVHS) envisioned by Congress and the Department of Transportation. It is unclear, however, how the technology provides location capability superior to substitute configurations, such as a combination of GPS technology and a single narrowband telemetry channel. There are no studies of which the League is aware that address the relative merits of alternative technologies. Any responsible resolution of this proceeding would necessitate a comparison of technologies for alternative provision of the same services with less spectrum impact. That comparison would reveal the relative need for any expansion of AVM operation at 902-928 MHz.

12. Any expansion of the AVM rules to permit private, or private carrier use of the technology for location of persons or objects, is a gratuitous expansion of uses in an already crowded band. There are provisions in the Commission's Rules for location

of persons,¹⁶ and the Commission has just recently concluded without action a proceeding to allocate spectrum at 220-222 MHz for personal emergency locating transmitters.¹⁷ That proposal was rejected in part because search and rescue volunteers did not want the duplication of existing systems already in operation, on additional frequencies that would have to be monitored for distress calls. Even if there were a need for additional regulatory arrangements for location of objects and persons, it is not at all clear that the 902-928 MHz band is the best location for such a service. A vehicle location system is presently operating, for example, at 173.075 MHz, which was allocated by the Commission in Docket 88-566. Higher frequencies might be considered as well, given the services to be provided. This is especially true where one alleged use of the AVM technology is a "highway safety" system. The high probability of interference in the 902-928 MHz band from other services makes it a poor choice indeed for any service related to highway safety.

13. Other possibilities for use of the 902-928 MHz band in connection with IVHS exist as well, and deserve exploration before

¹⁶ See 47 C.F.R. §§5.108, 87.193, and Part 15 generally. In the Personal Emergency Locating Transmitter proceeding, Docket 89-599, alternatives for location of persons were discussed in the comments. These included the Mt. Hood Locator System and the RECCO system. These are Part 15 devices and by all accounts are useful. The latter is a personal locator system which uses the 791/1834 MHz frequencies, and employs a lightweight, inexpensive transmitter unit.

¹⁷ See the Memorandum Opinion and Order, 6 FCC Rcd. 4813 (1991).

final rules are enacted for AVM operation. The Commission has issued experimental licenses to explore spread spectrum use of the band for communicating information between infrastructure components of a highway; between vehicles and the infrastructure of the highway; between vehicles and maintenance facilities for vehicles; and within mass transit systems. Prior to any firm decisions regarding expansion of AVM technology at 902-928 MHz, the Commission should determine whether the IVHS concept would be furthered more effectively through other regulatory schemes and technologies which might, incidentally, have less impact on other users of the crowded band.

14. The extensive sharing of the 902-928 MHz segment makes it important that the Commission avoid service rules which would allow one service to exclude, de facto, other services in the band. The effect of the instant Notice proposal would be to load the entire band with LMS users, to the detriment of the Amateur Radio Service. The League is especially opposed to the expansion of the frequency availability to AVM to include the entire band, without the slightest justification therefor. Such would preclude any practical future use of the band for amateur television at 912-918 MHz, and weak-signal propagation research and experimentation at 902-903 MHz. There is no justification offered for the use of the 902-903 MHz band for AVM whatsoever.

15. The interrelationship between this proceeding and the inquiry portion of the wind profiler radar proceeding¹⁸ reflects further on the advisability of any expansion of AVM/LMS operation at 902-928 MHz. The concurrent proposal to permit AVM/LMS throughout the band, while at the same time inquiring into the allocation of 12.5 MHz for government and non-government wind profilers in the same band appears a further uncoordinated effort inconsistent with reasoned spectrum planning. While there are studies which address the interaction between amateur radio and wind profilers, there are no studies relative to the relationship between amateur radio operation and AVM systems. Nor, apparently, have any studies been done with respect to sharing of spectrum as between wind profiler radars and AVM operations. Before any further decisions are made in this proceeding which might prejudge the use of the band by other users, some compatibility studies are in order.

IV. Conclusions

16. The League understands that the Commission does not wish to continue interim Part 90 rules which apply to AVM. The Commission has noted that the interim nature of such rules may inhibit investment in AVM technology, though such rules have been in effect for almost 20 years. The Amateur Radio Service is concerned that the Commission, in an effort to make regulatory accommodation for the development of IVHS systems, is proposing

¹⁸ Supra, Footnote 11.

rules in this proceeding which are not in the least justified. They may not be most conducive to IVHS development, vice other systems. Nor was the regulatory structure as proposed in the Notice requested by any petitioner. The proposed rules are not configured

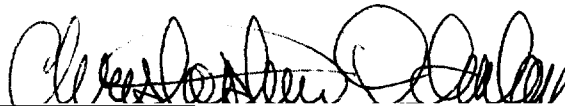
League, Incorporated respectfully requests that the Part 90 rules proposed in the Notice not be adopted at this time.

Respectfully submitted,

**THE AMERICAN RADIO RELAY
LEAGUE, INCORPORATED**

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By

A handwritten signature in dark ink, appearing to be "W. J. [unclear]", written over a horizontal line.